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EXAMINER

DURNFORD GESZVAIN, DILLON

ART UNIT	PAPER NUMBER
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2622

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/784,102	Applicant(s) KALE ET AL.	
	Examiner Dillon Durnford-Geszvain	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Claims **1-39** are pending, claims **9-12, 14, 27, 31, 35, 38** and **39** are amended and claims **40-48** are added.

Response to Arguments

2. Applicant's arguments filed 4/24/2007 have been fully considered but they are not persuasive. The Applicant argues that Kuno et al. does not teach that the holder is "formed on" pickup element 1. In support of this allegation the Applicant quotes a section from Kuno et al. (Column 6 line 63 to Column 7 line 27) that describes how the holder and the image pickup element are bonded and concludes from this that the holder is not formed on the image pickup element. However, the term "formed on" is not defined in the specification and therefore the assertion that Kuno et al. does not teach that the holder is "formed on" the pickup element is not persuasive as it appears from Fig. 1 and the above cited section of Kuno et al. that the holder 4 is formed on the image pickup element.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim **41** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim **41** recites the limitation "the mold insert" in line 2. There is insufficient antecedent basis for this limitation in the claim.

The Examiner assumes that claim **41** was intended to depend from claim 40 as this is the only claim that includes a mold insert.

Claim Rejections - 35 USC § 102

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims **1-28** and **30-39** rejected under 35 U.S.C. 102(e) as being anticipated by US 7,009,654 (Kuno et al.).

As to claim **1**, Kuno et al. teaches a camera module apparatus, comprising: a camera integrated circuit chip 1 (see Fig. 1); a lens 3; and a molding 4 formed on the integrated circuit chip for holding the lens 3 such that the lens is positioned thereby in relation to the integrated circuit chip (see Fig. 1).

As to claim **2**, see the rejection of claim **1** and note that Kuno et al. further teaches the camera module apparatus of claim **1**, wherein: the camera integrated circuit chip 1 is mounted on a printed circuit board 2 (see Fig. 1).

As to claim 3, see the rejection of claim 1 and note that Kuno et al. further teaches the camera module apparatus of claim 1, further comprising: a protective cover 7 over the integrated circuit chip 1(see Fig. 1).

As to claim 4, see the rejection of claim 1 and note that Kuno et al. further teaches the camera module apparatus of claim 3, wherein: the protective cover 7 is a molded spacer (see Fig. 1 and note that 7 is a spacer between the molding 4 and the integrated circuit 1).

As to claim 5, see the rejection of claim 3 and note that Kuno et al. further teaches the camera module apparatus of claim 3, wherein: the protective cover 7 is a glass sheet (see Column 6 lines 5-9).

As to claim 6, see the rejection of claim 1 and note that Kuno et al. further teaches the camera module apparatus of claim 1, wherein: the molding 4 has a recess for receiving the lens 3 (see Fig. 1 and note that the bottom of lens 3 intrudes into the opening in the molding 4).

As to claim 7, see the rejection of claim 1 and note that Kuno et al. further teaches the camera module apparatus of claim 1, wherein: the lens 3 is held in place on the molding 4 by an adhesive (see Column 6 lines 41-44).

As to claim 8, see the rejection of claim 1 and note that Kuno et al. further teaches the camera module apparatus of claim 1, wherein: the molding 4 has a recess for positioning the lens 3 relative to the integrated circuit chip 1 (see Figs. 1 and 4 and note that recess between contact surfaces 4c in which the bottom of the lens is fitted into).

As to claim 9, Kuno et al. teaches an integrated camera circuit 1 and lens module 3, comprising: a camera integrated circuit 1; a holder 4 formed at least partially on the camera integrated circuit 1 (see Fig. 1); and a lens assembly 3; and wherein the lens assembly 3 is affixed (via 4) to the integrated circuit 1 (see Fig. 4).

As to claim 10, see the rejection of claim 9 and note that Kuno et al. further teaches the integrated camera circuit and lens module of claim 9, wherein: the lens assembly 3 is rigidly affixed to the integrated circuit 1 via the holder 4 such that there is a gap between at least a portion of the lens assembly and a sensor array of the integrated circuit (see Figs. 1 and 4).

As to claim 11, see the rejection of claim 9 and note that Kuno et al. further teaches the integrated camera circuit and lens module of claim 9, wherein: the holder is a molded component 4 (see Figs. 1 and 4).

As to claim 12, see the rejection of claim 11 and note that Kuno et al. further

teaches the integrated camera circuit and lens module of claim **11**, wherein: the lens assembly 3 is attached to the holder 4 by an adhesive (Column 6 lines 41-44).

As to claim **13**, see the rejection of claim **9** and note that Kuno et al. further teaches the integrated camera circuit and lens module of claim **9**, wherein: the integrated circuit 1 is mounted on a circuit board 2 (see Fig. 1).

As to claim **14**, see the rejection of claim **9** and note that Kuno et al. further teaches the integrated camera circuit and lens module of claim **9**, further comprising: a protective cover 7 held in place over the integrated circuit chip 1 by the holder 4 (see Fig. 1).

As to claim **15**, see the rejection of claim **14** and note that Kuno et al. further teaches the integrated camera circuit and lens module of claim **14**, wherein: the protective cover 7 is a molded spacer (see Fig. 1 and note that 7 is a spacer between the molding 4 and the integrated circuit 1).

As to claim **16**, see the rejection of claim **14** and note that Kuno et al. further teaches the integrated camera circuit and lens module of claim **14**, wherein: the protective cover 7 is a glass sheet (Column 6 lines 5-9).

As to claim **17**, Kuno et al. teaches a method for producing a camera module,

comprising: molding a receptacle 4 over an integrated circuit 1; inserting a lens assembly 3 into the receptacle 4; and securing the lens assembly into the receptacle (Column 6 lines 41-44).

As to claim **18**, see the rejection of claim **17** and note that Kuno et al. further teaches the method of claim **17**, wherein: the lens assembly 3 is secured to the receptacle 4 by an adhesive (Column 6 lines 41-44).

As to claim **19**, see the rejection of claim **17** and note that Kuno et al. further teaches the method of claim **17**, wherein: the integrated circuit 1 is secured to a circuit board 2 before the receptacle is molded over the integrated circuit 1 (Column 7 lines 18-22).

As to claim **20**, see the rejection of claim **17** and note that Kuno et al. further teaches the method of claim **17**, wherein: the receptacle 4 includes a recessed portion for receiving the lens assembly 3 (see Figs. 1 and 4).

As to claim **21**, see the rejection of claim **20** and note that Kuno et al. further teaches the method of claim **20**, wherein: the recess portion includes a projection for fixing the distance of the lens assembly 3 from the integrated circuit 1 (see Figs. 1 and 4).

As to claim **22**, see the rejection of claim **17** and note that Kuno et al. further teaches the method of claim **17**, wherein: the camera module is affixed to a flex circuit 2 (Column 5 lines 42-47).

As to claim **23**, see the rejection of claim **17** and note that Kuno et al. further teaches the method of claim **17**, further comprising: placing a protective cover 7 over the integrated circuit 1 (see Figs. 1 and 4).

As to claim **24**, see the rejection of claim **23** and note that Kuno et al. further teaches the method of claim **23**, wherein: the step of placing the protective cover 7 over the integrated circuit 1 occurs during the step of molding a receptacle 4 over the integrated circuit 1 (see Figs. 1 and 4).

As to claim **25**, see the rejection of claim **23** and note that Kuno et al. further teaches the method of claim **23**, wherein: the protective cover is a molded spacer (see Fig. 1 and note that 7 is a spacer between the molding 4 and the integrated circuit 1).

As to claim **26**, see the rejection of claim **23** and note that Kuno et al. further teaches the method of claim **23**, wherein: the protective cover is a glass plate (Column 6 lines 5-9).

As to claim **27**, Kuno et al. teaches a camera apparatus, comprising: an

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integrated circuit camera apparatus having thereon a photosensitive array 1a; and a lens assembly 3 for focusing light on the photosensitive array 1a; wherein the lens assembly is rigidly affixed on the integrated circuit camera apparatus by a lens assembly receiving apparatus 4 formed integrally on the integrated circuit camera apparatus (see Figs. 1 and 4).

As to claim **28**, see the rejection of claim **27** and note that Kuno et al. further teaches the camera apparatus of claim **27**, wherein: the lens assembly 3 has a housing 4 for receiving at least one lens (see Figs. 1 and 4).

As to claim **30**, see the rejection of claim **27** and note that Kuno et al. further teaches the camera apparatus of claim **27**, wherein: the integrated circuit camera apparatus is affixed to a circuit board 2 (see Figs. 1 and 4).

As to claim **31**, see the rejection of claim **27** and note that Kuno et al. further teaches the camera apparatus of claim **27**, wherein: the integrated circuit camera apparatus is affixed to a circuit board 2; and the lens assembly receiving apparatus 4 is formed at least partially on the circuit board (see Fig. 1 and 4).

As to claim **32**, see the rejection of claim **31** and note that Kuno et al. further teaches the camera apparatus of claim **31**, wherein: the lens assembly receiving apparatus 4 is a molded receptacle (Column 8 lines 4-6).

As to claim **33**, see the rejection of claim **31** and note that Kuno et al. further teaches the camera apparatus of claim **31**, wherein: the lens assembly 3 is rigidly affixed within the lens assembly receiving apparatus 4 (see Figs. 1 and 4).

As to claim **34**, see the rejection of claim **31** and note that Kuno et al. further teaches the camera apparatus of claim 31, wherein; the lens assembly 3 is affixed within the lens assembly receiving apparatus 4 by an adhesive (Column 6 lines 41-44).

As to claim **35**, see the rejection of claim **27** and note that Kuno et al. further teaches the camera apparatus of claim **27**, further comprising: a protective cover 7 fixed between the integrated circuit camera apparatus 1 and the lens assembly 3 by the lens assembly receiving apparatus 4 (see Figs. 1 and 4).

As to claim **36**, see the rejection of claim **35** and note that Kuno et al. further teaches the camera apparatus of claim **35**, wherein: the protective cover 7 is a molded spacer (see Fig. 1 and note that 7 is a spacer between the molding 4 and the integrated circuit 1).

As to claim **37**, see the rejection of claim **35** and note that Kuno et al. further teaches the camera apparatus of claim 35, wherein: the protective cover 7 is a glass plate (Column 6 lines 5-9).

As to claim **38**, see the rejection of claim **35** and note that Kuno et al. further teaches the camera camera apparatus of claim 35, wherein: the lens assembly receiving apparatus is an overmold 4 formed over the integrated circuit camera apparatus (see Figs. 1 and 4).

As to claim **39**, Kuno et al. teaches a camera module apparatus, comprising: a camera integrated circuit chip 1; a lens 3; and means for holding the lens 4 such that the lens is positioned thereby in relation to the integrated circuit chip, said means for holding the lens including a molded component formed on the camera integrated circuit chip (see Figs. 1 and 4).

As to claim **40**, see the rejection of claim **17** and note that Kuno et al. teaches the method of claim **17**, wherein: the step of molding the receptacle 4 over the integrated circuit 1 includes contacting a top surface of the integrated circuit 1 with a mold insert 2 (see Fig. 4).

As to claim **41**, see the rejection of claim **40** and note that Kuno et al. teaches the method of claim **40**, wherein: the mold insert includes a compliant surface (the surface of 2) to protect the integrated circuit 1 (see Fig. 4 and note that 2 overlaps 1 at the edges).

As to claim **46**, see the rejection of claim **1** and note that Kuno et al. further teaches the camera module of claim **1**, wherein: a top surface of the camera integrated surface chip 1 include a sensor array 1a; and the holder 4 is adhered to the top surface (see Figs. 1 and 4).

As to claim **47**, see the rejection of claim **9** and note that Kuno et al. further teaches the integrated camera circuit and lens module of claim **9**, wherein: a top surface of the camera integrated circuit 1 includes a sensor array 1a; and the holder 4 is adhered to the top surface (see Figs. 1 and 4).

As to claim **48**, see the rejection of claim **27** and note that Kuno et al. further teaches the camera apparatus of claim **27**, wherein: the photosensitive array 1a is on a top surface of the integrated circuit camera apparatus 1; and the lens assembly receiving apparatus 4 is adhered to the top surface (see Figs. 1 and 4).

Claim Rejections - 35 USC § 103

8. Claim **29** is rejected under 35 U.S.C. 103(a) as being unpatentable over US 7,009,654 (Kuno et al.) in view of US Pre-Grant Publication 2004/0109079 (Fujimoto et al.)

As to claim **29**, see the rejection of claim **27** and note that what Kuno et al. doesn't teach is the lens assembly having a housing for receiving two lenses. However, Fujimoto et al. teaches a lens assembly for an image sensor module that has a housing

for receiving two lenses (see Fig. 1 and [0026]). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have made the housing of Kuno et al. in such a fashion so as to hold two lenses as is done in the invention of Fujimoto et al. as compared to the case where a single lens is used, the use of the two lenses of Fujimoto et al. can increase the number of apertures, prevent the distortion of a captured image and provide a clear captured image.

9. Claims **42-45** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 7,009,654 (Kuno et al.) in view of US 2004/0012698 (Suda et al.).

As to claim **42**, see the rejection of claim **17** and note that what Kuno et al. does not explicitly teach is the step of molding the receptacle over the integrated circuit includes simultaneously molding a receptacle over each of a plurality of integrated circuits. However, Suda et al. teaches molding receptacles over multiple integrated circuits simultaneously (see [0155] and fig. 8).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have molded receptacles over many integrated circuits simultaneously as is done in Suda et al. in the method of Kuno et al. as this would allow for more efficient assembly of the parts than if they were all assembled individually.

As to claim **43**, see the rejection of claim **17** and note that what Kuno et al. does not explicitly teach is the step of molding the receptacle over the integrated circuit when it is physically coupled to other integrated circuits. However, Suda et al. teaches

molding receptacles over multiple integrated circuits simultaneously while the integrated circuits are physically coupled together(see [0155] and fig. 8).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have molded receptacles over many integrated circuits simultaneously when they are physically coupled as is done in Suda et al. in the method of Kuno et al. as this would allow for more efficient assembly of the parts than if they were all assembled individually.

As to claim **44**, see the rejection of claim **43** and note that Kuno et al. in view of Suda et al. would further teach that the step of molding the receptacle over the integrated circuit includes simultaneously molding receptacles over at least some of the other integrated circuits (see Fig. 8 and [0155] of Suda et al.).

As to claim **45**, see the rejection of claim **43** and note that Kuno et al. in view of Suda et al. would further teach that the integrated circuit and the other integrated circuits are physically coupled by being mounted on a unitary substrate (see Fig. 7 of Suda et al.); and the integrated circuit and the other integrated circuits are subsequently separated by dividing the unitary substrate (see [0152] lines 7-9 of Suda et al. and note that they are separated by a dicing blade).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dillon Durnford-Geszvain whose telephone number is (571) 272-2829. The examiner can normally be reached on Monday through Friday 8 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Dillon Durnford-Geszvain

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